What is claimed is:

1. An apparatus, comprising:

a receiver adapted to receive an optical signal and to convert the optical signal to a corresponding electrical signal; and

a control circuit coupled to the receiver, the control circuit including a monitoring component adapted to monitor a noise level of at least a portion of the electrical signal and to adjust a gain of the receiver based on the noise level.

2. The apparatus of Claim 1, further including a transmitter adapted to transmit the optical signal to the receiver.

3. The apparatus of Claim 2, wherein the monitoring component is further adapted to adjust an amplification of the transmitter based on the noise level.

4. The apparatus of Claim 1, wherein the receiver includes a photodiode.

5. The apparatus of Claim 1, wherein the monitoring component is adapted to monitor an output voltage of the electrical signal and to adjust at least one of an amplification of the transmitter and a gain of the receiver to maintain a desired RMS level of the electrical signal.

6. The apparatus of Claim 1, wherein the monitoring component is adapted to monitor a noise level of at least a portion of the electrical signal by calculating a calculated noise level of at least a portion of the electrical signal, and comparing the calculated noise level with a threshold value.

7. The apparatus of Claim 1, wherein the monitoring component includes a noise energy calculation component adapted to calculate a calculated noise level of at least a portion of the electrical signal.

8. The apparatus of Claim 7, wherein the noise energy calculation component includes an integrate-and-dump circuit that integrates an energy value over a bit interval.

9. The apparatus of Claim 8, wherein the noise energy calculation component includes a subtractor component that receives a state indicator signal and subtracts a high-state +A or a low-state –A state from the electrical signal based on the state indicator signal.


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10. The apparatus of Claim 9, wherein the noise energy calculation component includes a squaring function that squares an output from the subtractor component and transmits the squared output to the integrate-and-dump circuit.

11. The apparatus of Claim 1, wherein the monitoring component includes a condition determining component adapted to determine at least one of a presence or an absence of light at the receiver.

12. The apparatus of Claim 1, wherein the monitoring component includes a state means calculation component adapted to compute at least one of a high state means and a low state means of the electrical signal.

13. The apparatus of Claim 1, wherein the monitoring component includes:

a high energy calculation component adapted to compute an average energy for the high-state A;

a low energy calculation component adapted to compute an average energy for the low-state –A; and

a comparator adapted to compare a ratio of the average energies for the high- and low-states A, -A with a predetermined threshold.

14. The apparatus of Claim 1, wherein the monitoring component is adapted to reduce at least one of an amplification of the transmitter and a gain of the receiver when a ratio of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal is greater than a predetermined threshold.

15. The apparatus of Claim 1, wherein the monitoring component includes:

a condition determining component adapted to determine at least one of a presence or an absence of light at the receiver;

a state means calculation component adapted to compute at least one of a high state means and a low state means of the electrical signal;

a high energy calculation component adapted to compute an average energy for the high-state A;

a low energy calculation component adapted to compute an average energy for the low-state –A; and



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a comparator adapted to compare a ratio of the average energies for the high- and low-states A, -A with a predetermined threshold.

16. An optical system, comprising:

a transmitter adapted to transmit an optical signal;

a receiver adapted to receive the optical signal and to output an electrical signal; and

a monitoring component adapted to monitor a noise level of at least a portion of the electrical signal and to adjust at least one of an amplification of the transmitter and a gain of the receiver based on the noise level.

17. The optical system of Claim 16, wherein the transmitter includes an optical amplifier.

18. The optical system of Claim 16, wherein the receiver includes an avalanche photodiode.

19. The optical system of Claim 16, wherein the monitoring component is adapted to monitor an output voltage of the electrical signal and to adjust at least one of an amplification of the transmitter and a gain of the receiver to maintain a desired RMS level of the electrical signal.

20. The optical system of Claim 16, wherein the monitoring component includes a noise energy calculation component adapted to calculate a calculated noise level of at least a portion of the electrical signal.

21. The optical system of Claim 16, wherein the monitoring component includes:

a high energy calculation component adapted to compute an average energy for the high-state A;

a low energy calculation component adapted to compute an average energy for the low-state –A; and

a comparator adapted to compare a ratio of the average energies for the high- and low-states A, -A with a predetermined threshold.

22. The optical system of Claim 16, wherein the monitoring component is adapted to reduce at least one of an amplification of the transmitter and a gain of the receiver when a


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ratio of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal is greater than a predetermined threshold.

23. The optical system of Claim 16, wherein the monitoring component includes:

a condition determining component adapted to determine at least one of a presence or an absence of light at the receiver;

a state means calculation component adapted to compute at least one of a high state means and a low state means of the electrical signal;

a high energy calculation component adapted to compute an average energy for the high-state A;

a low energy calculation component adapted to compute an average energy for the low-state –A; and

a comparator adapted to compare a ratio of the average energies for the high- and low-states A, -A with a predetermined threshold.

24. A vehicle, comprising:

a fuselage;

a propulsion system operatively coupled to the fuselage; and

an optical system adapted to transmit signals, the optical system including:

a transmitter adapted to transmit an optical signal;

a receiver adapted to receive the optical signal and to output an electrical signal; and

a monitoring component adapted to monitor a noise level of at least a portion of the electrical signal and to adjust at least one of an amplification of the transmitter and a gain of the receiver based on the noise level.

25. The vehicle of Claim 24, wherein the transmitter includes an optical amplifier.

26. The vehicle of Claim 24, wherein the receiver includes an avalanche photodiode.

27. The vehicle of Claim 24, wherein the monitoring component is adapted to monitor an output voltage of the electrical signal and to adjust at least one of an amplification of the transmitter and a gain of the receiver to maintain a desired RMS level of the electrical signal.



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28. The vehicle of Claim 24, wherein the monitoring component includes a noise energy calculation component adapted to calculate a calculated noise level of at least a portion of the electrical signal.

29. The vehicle of Claim 24, wherein the monitoring component includes:

a high energy calculation component adapted to compute an average noise energy for the high-state A;

a low energy calculation component adapted to compute an average noise energy for the low-state –A; and

a comparator adapted to compare a ratio of the average noise energies for the high- and low-states A, -A with a predetermined threshold.

30. The vehicle of Claim 24, wherein the monitoring component is adapted to reduce at least one of an amplification of the transmitter and a gain of the receiver when a ratio of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal is greater than a predetermined threshold.

31. The vehicle of Claim 24, wherein the monitoring component includes:

a condition determining component adapted to determine at least one of a presence or an absence of light at the receiver;

a state means calculation component adapted to compute at least one of a high state means and a low state means of the electrical signal;

a high energy calculation component adapted to compute an average noise energy for the high-state A;

a low energy calculation component adapted to compute an average noise energy for the low-state –A; and

a comparator adapted to compare a ratio of the average noise energies for the high- and low-states A, -A with a predetermined threshold.

32. A method of controlling an output of an optical system, comprising:

receiving an optical signal with a receiver;

converting the optical signal to a corresponding electrical signal;



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monitoring a noise level of at least a portion of the electrical signal; and

adjusting at least one of an amplification of the optical signal and a gain of the receiver based on the noise level.

33. The method of Claim 32, further including transmitting the optical signal to the receiver.

34. The method of Claim 32, wherein receiving an optical signal with a receiver includes receiving an optical signal with a photodiode.

35. The method of Claim 32, wherein adjusting at least one of an amplification of the optical signal or a gain of the receiver based on the noise level adjusting at least one of an amplification of a transmitter and a gain of the receiver to maintain a desired RMS level of the electrical signal.

36. The method of Claim 32, wherein monitoring a noise level of at least a portion of the electrical signal includes calculating a calculated noise level of at least a portion of the electrical signal, and comparing the calculated noise level with a threshold value.

37. The method of Claim 32, wherein receiving an optical signal with a receiver includes receiving an optical signal with an avalanche photodiode, and wherein comparing the calculated noise level with a threshold value includes comparing the calculated noise level with a breakdown threshold of the avalanche photodiode.

38. The method of Claim 32, wherein monitoring a noise level of at least a portion of the electrical signal includes calculating a noise energy level of at least a portion of the electrical signal.

39. The method of Claim 38, wherein calculating a noise energy level of at least a portion of the electrical signal includes integrating a noise energy value over a bit interval.

40. The method of Claim 38, wherein calculating a noise energy level of at least a portion of the electrical signal includes receiving a state indicator signal that indicates a condition of the optical signal, and subtracting a high-state +A or a low-state –A state from the electrical signal based on the state indicator signal.



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41. The method of Claim 32, wherein monitoring a noise level of at least a portion of the electrical signal includes:

computing an average energy for a high-state A of the electrical signal;

computing an average energy for the low-state –A of the electrical signal; and

comparing a ratio of the average energies for the high- and low-states A, -A with a predetermined threshold.

42. The method of Claim 41, wherein adjusting at least one of an amplification of the optical signal and a gain of the receiver based on the noise level including reducing at least one of an amplification of the optical signal and a gain of the receiver when a ratio of the average energy of the high-state A and the average energy of the low-state A is greater than the predetermined threshold.

43. The method of Claim 41, wherein monitoring a noise level of at least a portion of the electrical signal includes:

determining at least one of a presence or an absence of light at the receiver;

computing at least one of a high state means and a low state means of the electrical signal;

computing an average noise energy for the high-state A;

computing an average noise energy for the low-state –A; and

comparing a ratio of the average noise energies for the high- and low-states A, -A with a predetermined threshold.



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